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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Investigation pursuant to Senate Bill 380 to determine the feasibility of minimizing or eliminating the use of the Aliso Canyon natural gas storage facility located in the County of Los Angeles while still maintaining energy and electric reliability for the region.	Investigation 17-02-002 (Filed February 9, 2017)

SIERRA CLUB COMMENTS ON NOVEMBER 3, 2021 WORKSHOP

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Dated: November 10, 2021.

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Pursuant to the September 30, 2021 *E-Mail Ruling Setting November 3, 2021 Workshop*, Sierra Club timely submits the following comments.

I. INTRODUCTION

The lack of transparency over the assumptions and process FTI Consulting, Inc. ("FTI") used to develop its proposed portfolios prevent Sierra Club and other stakeholders from effectively evaluating the options they have presented. These comments identify several specific aspects of FTI's analysis that should be clarified and, if necessary, corrected for the public to have confidence in this study. As a general matter, parties should have access to all FTI's data inputs, a complete description of how its models operate, and all other information that Commission rules guarantee access to when a party submits evidence based on a computer model in a proceeding.

As the Commission continues to vet and improve its analysis of options for retiring the Aliso Canyon gas storage facility ("Aliso Canyon" or "Aliso"), it should pursue no-regrets options for reducing gas demand in the Los Angeles basin ("LA Basin") without further delay. For instance, more than six years after the disaster at Aliso Canyon, the Commission has not yet authorized programs to help low-income residents transition to electric appliances at the pace

that will be necessary to meet California's climate goals. Moreover, the Commission has not ordered targeted electric capacity resource procurements in the LA Basin that could reduce the need to burn gas at in-basin generators on peak days. Massive new investments in clean appliances, renewable generation, and energy storage will be necessary to meet California's climate goals and the Commission should begin deploying these resources immediately in the region affected by Aliso Canyon. Conversely, the Commission should not authorize new investments that would make it harder to equitably achieve California's climate policies. Specifically, the Commission should reject any proposals for investments in new gas transmission infrastructure, which would be stranded assets as soon as gas demand falls by the amounts required by California's most feasible and cost-effective decarbonization pathways.

Based on the information about FTI's modeling that is available so far, it appears FTI likely underestimates the effectiveness of some of the no-regrets strategies at reducing demand and undervalues their ability to reduce climate pollution. It remains unclear how FTI's reliance on data from an anti-electrification American Gas Association ("AGA") publication affected its analysis in determining the impact of building electrification on winter peak demand. The final report and disclosure of native, unlocked workpapers should clarify exactly how FTI calculated the impact of electrification on gas demand so that, if necessary, the Commission and stakeholders can correct flaws in FTI's analysis. A separate major flaw in FTI's analysis is using a social cost of carbon to assess the benefits of carbon reductions, rather than the carbon reduction values in the Commission's own avoided cost calculator. Correcting the value of carbon reductions will reveal that strategies that reduce climate pollution are far more cost-effective than FTI's current analysis suggests. Not only should improved analysis make the

Commission's no-regrets options even more attractive, but these investments must occur for California to achieve its decarbonization objectives.

These comments highlight the major questions and concerns Sierra Club was able to identify in the seven days provided for comment after the November 3 workshop, which was not sufficient to review FTI's analysis. The lack of transparency over FTI's analysis has not been cured by Energy Division staff posting a new memo from FTI, which appears to answer some subset of the questions from stakeholders, on the day that these comments are due.

II. COMMENTS AND QUESTIONS ON SPECIFIC PORTFOLIOS

A. Portfolio 1: Gas Transmission System Expansion

1. The Commission should not add unnecessary new costs to the gas system that will stymie its efforts to equitably transition to a clean energy system.

It would be irrational to add unnecessary costs to the gas distribution system, which is already facing a stranded cost crisis. As a recent report for the California Energy Commission ("CEC") explained, any future in which California meets its climate goals will see a reduction in natural gas demand, which will put upward pressure on gas rates that could cause customers to exit the gas system, creating a feedback loop that drives higher rates and ever-greater incentive to disconnect from gas service.[1] The impacts of higher gas rates could be especially acute for low-income customers, who are less able to electrify.[2] To avoid exacerbating these challenges, the CEC's experts found that it is "prudent for the state to begin considering strategies for managing the costs of the natural gas distribution system in California."[3] Consistent with these recommendations, Gridworks also recommended that policymakers "[i]dentify *alternatives to significant new investments in the gas delivery system*, not otherwise needed to maintain system

[1] CEC, *The Challenge of Retail Gas in California's Low-Carbon Future*, at 5 (Apr. 2020), https://www.energy.ca.gov/sites/default/files/2021-06/CEC-500-2019-055-F.pdf.
[2] *Id.*
[3] *Id.*

safety and reliability."[4] The Commission should not ignore the sound advice of these independent experts. The costs of unnecessary new investments in the gas distribution system are likely to fall on the households that are least able to bear these expenses.

2. FTI's analysis is insufficient to show that the gas infrastructure in Portfolio 1 would effectively replace Aliso Canyon.

In Portfolio 1a and 1b, FTI presented two alternative investments in Southern California Gas Company's ("SoCalGas") gas transmission system that would increase SoCalGas' ability to bring gas into the periphery of its system. Specifically, Portfolio 1a includes three sets of pipeline loops that would be sited in a separate zone from and to the east of the major population centers in SoCalGas' territory.[5] Portfolio 1b includes one large pipeline loop near Wheeler Ridge, which is north of the major population centers SoCalGas serves.[6] In addition, both Portfolio 1a and 1b include expanding a single facility that is actually located near Aliso Canyon: the Quigley Regulator Station.[7] According to FTI's cost estimates, the cost of the Quigley Regulator Station expansion is about 1/100 of the cost of the pipeline investments in the periphery of the SoCalGas system.[8]

FTI's modeling is not adequate to judge whether the gas its proposed infrastructure projects would bring onto SoCalGas' system could flow through SoCalGas' system and reach the customers who would demand that gas. FTI has not used the gas industry's standard

[4] Gridworks, *California's Gas System in Transition—Equitable, Affordable, Decarbonized and Smaller*, at 3 (Sept. 2019), https://gridworks.org/wp-content/uploads/2019/09/CA_Gas_System_in_Transition.pdf.
[5] FTI, *Workshop #3: Portfolio 1–4 Modeling Approach, Inputs, and Results and Portfolio 5 Considerations*, at 35 (Nov. 3, 2021) ("FTI Presentation"), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/natural-gas/aliso-canyon/fti-presentation-workshop-3-revised.pdf.
[6] *Id.* at 36.
[7] *Id.* at 35–36.
[8] FTI, *Cost-Benefit Analysis of Portfolio Options for Closure of Aliso Canyon*, at tabs Portfolio 1a-N. Zone Exp. and Portfolio 1b-Wheeler Ridge Exp. (Nov. 1, 2021) (FTI Portfolio 1–4 Cost-Benefit Analysis excel spreadsheet), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/natural-gas/aliso-canyon/fti-portfolio-1-4-cost-benefit-analysis.xlsm.

hydraulic model—DNV Synergi—which allows modelers to analyze the flow of gas within a system. With DNV Synergi, modelers can examine whether congestion could prevent gas that FTI's proposed infrastructure projects could bring into SoCalGas' system from reaching its demand centers. DNV Synergi is not just the industry leader for simulating gas system networks; it is the software SoCalGas uses to model its own system. SoCalGas' actual gas system network models were not used in FTI's hydraulic modeling, which calls into question how FTI can assure its modeling reflects actual conditions.

Instead, FTI used the Gregg Engineering hydraulic modeling software, which is typically used for modeling point-to-point pipelines. This software is not typically used to model gas system *networks* like the SoCalGas system at issue here.

The Commission should not authorize the investments in pipelines to replace Aliso when SoCalGas' system network has not even been modeled to analyze the impact of network congestion in the Aliso area on the effectiveness of these investments. If any such modeling has been done to support FTI's Portfolio 1a or 1b, they were not provided to the public. This analysis of congestion is crucial to understanding the impact to the reliability of gas and power in the LA Basin.

Regardless of what strategy the Commission decides to use to retire Aliso, it will need a gas system network hydraulic model of SoCalGas' system to confirm that congestion will not create reliability issues. For this exercise, the Commission must ensure that all approved investments in SoCalGas' system are already taken into account. For instance, it is unclear whether the expansion to Quigley Regulator Station that FTI includes in its Portfolios is duplicative of the improvements SoCalGas already requested for this station in its 2019 general

rate case.[9] It is also unclear whether the pipeline looping FTI proposed in Portfolio 1 is a replacement of existing pipe or the addition of new pipelines. If this is an existing pipeline that would fall under SoCalGas' existing maintenance or replacement programs, it should be included in the base case.

Even without sophisticated modeling, the limited information that is available about FTI's Portfolio 1 options raises significant questions about their effectiveness at reducing reliance on Aliso. The main gas system improvements FTI recommends are on the opposite side of the LA Basin from Aliso Canyon and gas flow to Aliso Canyon from these locations is constrained as it has to pass through the gas system network to reach Aliso. In general pipelines flow into the LA Basin from various sides and do not "cross the basin" to serve the opposite side from a gas flow perspective.

Ultimately, it would be unreasonable for the Commission to authorize any of the investments in Portfolio 1 to mitigate reliance on Aliso Canyon. FTI has not provided adequate information to assure the Commission and stakeholders that these investments could replace Aliso Canyon. If these investments pour new costs into the gas system without resolving the problem of the region's reliance on Aliso Canyon, they would have the perverse effect of making it harder to transition to a clean energy economy by adding new stranded assets to SoCalGas' system.

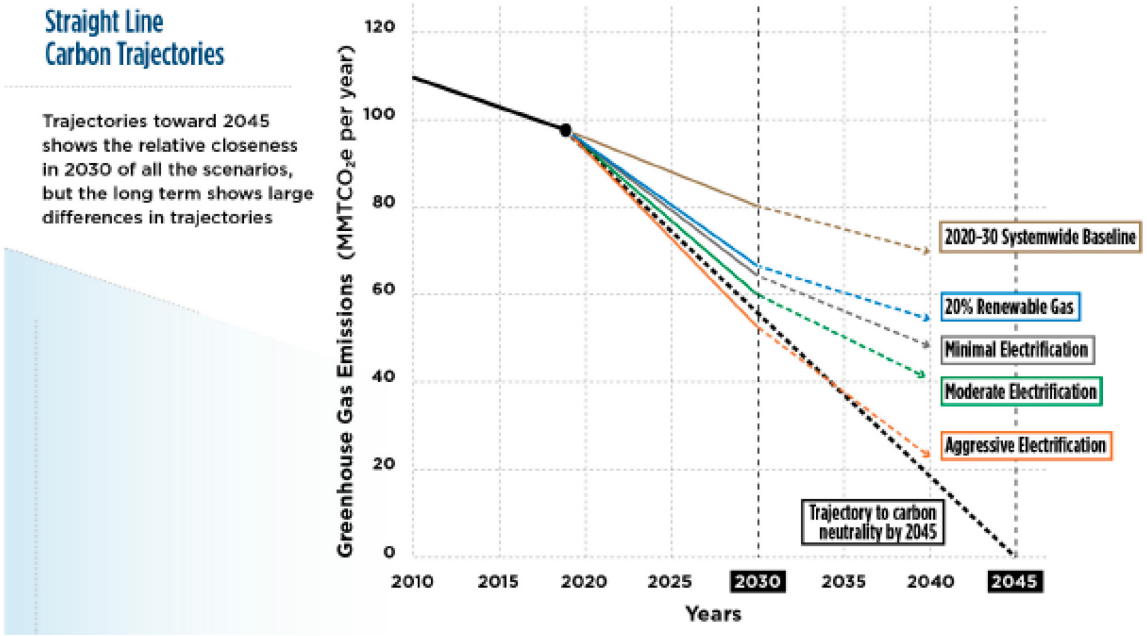
[9] SoCalGas testimony for its 2019 general rate case proposed significant upgrades to the Quigley station, including: "Demolishing existing tanks, replacement of meters, telecommunications upgrade, control valve replacements and removal of associated piping due to aging piping, valves and systems." A.17-10-007, Exh. SCG-07, SoCalGas Joint Direct Test. of Michael A. Bermel and Beth Musich (Gas Transmission), at MAB-27 (Oct. 6, 2017), https://www.socalgas.com/regulatory/documents/a-17-10-008/SCG-07%20Musich%20and%20Bermel%20Prepared%20Direct%20Testimony.pdf. It is unclear how these improvements relate to the proposed improvements in the presentation.

B. Portfolio 2: Gas Demand Reduction

1. The CEC's aggressive electrification scenario should be modelled.

Slide 42 of the FTI Presentation states that the "[l]evel of electrification is assumed to be at the Moderate Electrification level of the CEC's 2021 California Building Decarbonization Assessment." The Moderate Electrification Scenario assumes 100 percent new all electric construction, 50 percent replacement of gas with electric appliances, and five percent early retirement of gas appliances by 2030.[10] Under the CEC's analysis, this scenario falls short of aligning with California's decarbonization objectives.

Figure 1: Systemwide Straight-Line Building Emission Trajectories of Scenarios Compared to 2045 Carbon Neutrality[11]



The Aggressive Electrification Scenario assumes 100 percent new all electric construction, 90 percent replacement of gas with electric appliances, and 70 percent early

[10] CEC, *California Building Decarbonization Assessment*, at 44–45 (Aug. 2021) ("Building Decarbonization Assessment"), https://efiling.energy.ca.gov/GetDocument.aspx?tn=239311.
[11] *Id.* at 13.

retirement of gas appliances by 2030.[12] It is important to understand the impact on the ability to close Aliso Canyon under a building electrification scenario that is at the pace necessary for California to meet its carbon neutrality requirements. This scenario should be modelled.

2. Stakeholders need information about the geographic area where building electrification will be effective in reducing reliance on the Aliso Canyon gas storage facility.

It appears that FTI simply modelled building electrification at statewide levels to meet the Moderate Electrification Scenario under the Building Decarbonization Assessment. The geographic effectiveness of building electrification needs to be defined to allow for targeted programs that are effective in helping to enable Aliso's closure. Analysis that identifies the area where building electrification can help shutter Aliso is important not only for the Commission's own planning, but also for local governments in Southern California that may implement electrification measures.

3. The assumptions and methodology for determining the impact of building electrification on 1-in-10 winter peak demand are not clear and in the case of hourly load shape of heat pump water heaters, grossly inaccurate.

Slide 42 of the FTI Presentation states that "[h]ourly load shapes for displaced gas and electric demand increase developed by FTI based on temperature data and American Gas Association information on electric technology efficiency" and includes a table stating that electrification and electric energy efficiency would reduce 1-in-10 winter peak demand by 115 MMcf/d in 2027 and 170 MMcf/d in 2035. Supporting materials included on the Commission's website do not explain how these numbers were reached. All calculations and assumptions must be disclosed as part of this process to provide the public with confidence in this analysis.

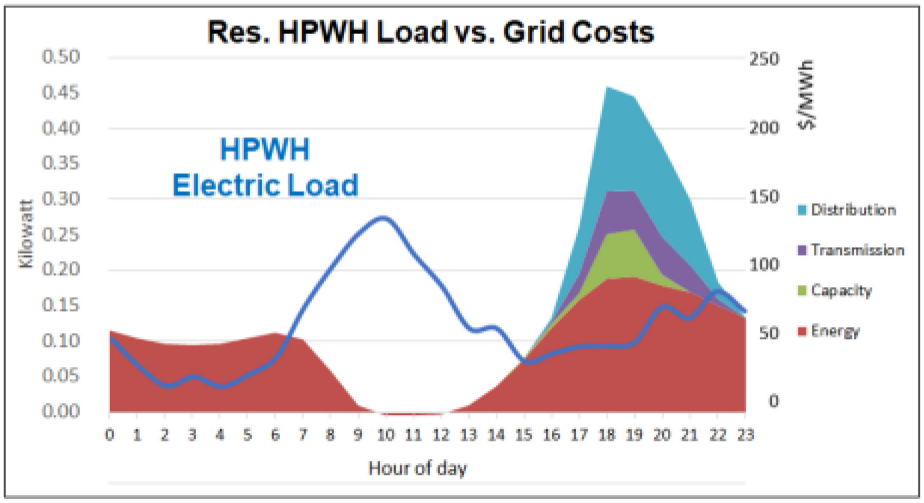
[12] *Id.* at 45–46.

What is disclosed raises concerns. With regard to information derived from the AGA, FTI's "Explanatory Note" for determining 2027 peak hourly load does not provide actual calculations and inputs, but simply provides a short narrative methodology with a reference to a 2018 AGA publication on "policy-driven electrification."[13] It is not clear how reliance on this AGA document shaped FTI's conclusions. With regard to slide's 42 of FTI Presentation's reference to "information on electric technology efficiency" it states was derived from the AGA, whose study states that for electric water heater efficiency, "[t]he water heater conversions from natural gas to electric demand are based on an electric heat pump water heater with an average efficiency of 200 percent."[14] In contrast, for its Building Decarbonization Assessment, the CEC assumed an efficiency of 3.24 (324 percent) for heat pump water heaters.[15] The CEC, not the AGA, should be the source of electric technology efficiency in this analysis. In response to questions on the use of AGA data, FTI stated it was used to determine temperature-dependent efficiency. Once of the sources for data in the AGA Study cited by FTI refers to a study on seasonal performance of air source heat pumps from 2004.[16] An entity that has a long track record of undermine electrification efforts should not be a source of data for FTI's analysis. ***Please explain the extent to which AGA assumptions on electric technology efficiency were used to determine the 1-in-10 winter peak day shortfall on Slide 42 of the FTI Presentation and if this data was used, replace with CEC data for Heat Pump Water Heaters ("HPWH") and heat pump space heating using the LA Climate Zone.***

[13] FTI, *Explanatory Note* (2021), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/natural-gas/aliso-canyon/fti-electrification-explanatory-note.pdf.
[14] AGA, *Implications of Policy-Driven Residential Electrification*, at 57 (July 2018) ("AGA Study"), https://www.aga.org/globalassets/research--insights/reports/aga_study_on_residential_electrification.pdf.
[15] CEC, *Input Assumptions for the FSSAT_5.7 Tool*, at tab Elec Tech Characteristics, row 85, column I (June 2020), https://efiling.energy.ca.gov/GetDocument.aspx?tn=233291&DocumentContentId=65775.
[16] AGA Study at 57, n.5.

With regard to the hourly load shape Slide 42 of the FTI Presentation states is provided by AGA information, none of it appears in the referenced AGA Study and it is unclear where this information was derived. The FTI Electrification Hourly Demand spreadsheet on the Commission's Aliso Canyon webpage also contains no citation to a data source.[17] Like data on appliance efficiency, it is unclear why FTI opted to use information from the AGA when the CEC's Title 24 Compliance software should have hourly load information for space heating by climate zone. The FTI spreadsheet also assumes HPWHs operate consistently across all hours. In fact, as noted in the Commission's HPWH Staff Proposal for the SGIP proceeding, "HPWH's electrical demand curve peaks during the middle of the day (i.e., off-peak hours) when renewable generation, especially utility-scale and rooftop solar are greatest."[18]

Figure 2: Single-Family Residential HPWH Electric Load[19]



[17] FTI, *Electrification Hourly Demand* (2021), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/natural-gas/aliso-canyon/fti-electrification-hourly-demand.xlsx.
[18] R.20-05-012, Administrative Law Judge's Ruling Providing Proposal, Requesting Comment, and Updating Procedural Schedule, Attach 1 at 20 (Apr. 16, 2021), https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M377/K729/377729072.PDF.
[19] *Id.* at 19.

HPWHs can also be programmed to shift load and pre-heat water ahead of peak demand times to further limit peak demand impacts. This is not just a theoretical possibility; the Commission and stakeholders should anticipate that any targeted electrification programs that arise from this proceeding take advantage of these capabilities by, for instance, making it a standard practice for the hired installers to program HPWHs to heat at mid-day. ***Please explain how the AGA data was used to determine model outputs and replace with CEC data. Please also indicate the extent costs and impacts that can be mitigated with demand responsive HPWHs.*** This is the type of information that is needed to inform potential action by the Commission in deploying effective solutions to shut down Aliso Canyon.

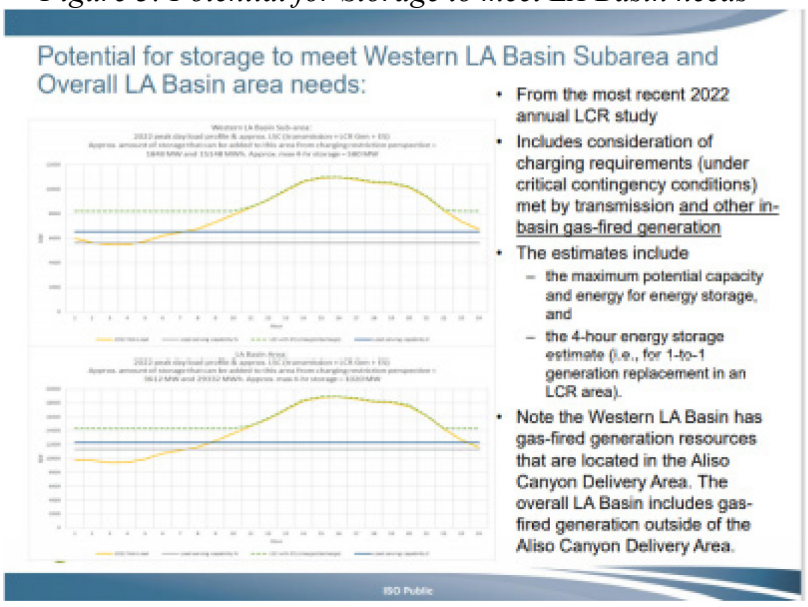
C. Portfolio 3: Generator Additions

1. The model does not appear to account for local transmission constraints and seems to assume a certain amount of resources will be deployed in SCE's service territory.

The FTI model assumes a base case mix of electric generation additions largely based off of 11.5 GW of net qualifying capacity ("NQC") recently ordered by the Commission. From what Sierra Club gathered at the November 3 workshop, FTI assumes a significant amount is deployed in Southern California Edison Company ("SCE") service territory. Because the 11.5 GW the Commission authorized load serving entities to procure is for system capacity, there are currently no specific limits on where they can be deployed to meet the Commission's procurement authorization. Accordingly, the deployment locations assumed by FTI are far from assured. Moreover, it is unclear where in SCE's territory FTI assumed the utility would deploy its new capacity resources or otherwise accounted for the fact that deploying capacity resources in the portions of SCE territory outside the LA Basin would not necessarily relieve capacity needs in the basin. To the extent resources in certain locations are effective at reducing reliance on Aliso, this needs to be understood to direct their procurement in those areas.

In addition, local areas and sub-areas have limited transmission capability and therefore rely on in-basin resources to be available to serve local need in the event of a transmission contingency. For batteries to displace other local capacity resources in the event of a transmission outage, remaining "resources must be sufficient to recharge the batteries in anticipation of the outage continuing through the night and into the next day's peak load period."[20] Local capacity areas with significant amounts of gas generation in disadvantaged communities such as Western LA Basin are largely developed and therefore cannot accommodate utility-scale renewables to serve as a local generation source to charge batteries in the event of an extended transmission contingency. For example, CAISO analysis indicates that 4-hour battery storage could displace 580 MW in the Western LA Basin and slightly over 1 GW for the entire LA Basin on a 1-to-1 basis.[21]

Figure 3: Potential for Storage to meet LA Basin needs[22]



[20] *See* R.19-11-009, California Independent System Operator Corporation ("CAISO") Final Local Capacity Technical Study for 2021, at 3 (May 1, 2020), https://www.caiso.com/Documents/May1-2020-Final-2021-LocalCapacityTechnicalStudyReport-R19-11-009.pdf.

[21] CAISO, *Gas-fired Generation Requirements in the LA Basin*, at 4 (July 9, 2021), https://efiling.energy.ca.gov/getdocument.aspx?tn=238729.

[22] *Id.*

The model also does not appear to account for transmission constraints in determining resource effectiveness. Resources deployed outside the LA Basin do not meet local capacity requirements, necessitating continued reliance on gas generation in the LA Basin. Sierra Club has long advocated for in-basin storage procurement to, at a minimum, meet the current limits on 4-hour storage in meeting local area need. To the extent other resources are assumed to be deployed in the FTI Study, their effectiveness at reducing reliance on gas generation in the LA Basin when local capacity constraints are accounted must be better understood to have confidence that they will be effective in reducing reliance on Aliso and so that the Commission has reliable information to direct procurement in those areas.

In addition, it is Sierra Club's understanding that the model assumes all gas generators in the LA Basin remain operational. To the extent there are particular generators that are more or less reliant on Aliso Canyon, this is critical information to strategically deploy resources that can enable their retirement.

D. Portfolio 4: Transmission Additions

1. Proposed transmission solutions do not appear to account for LA Basin local capacity constraints.

The model's failure to consider LA Basin transmission constraints also compromises the legitimacy of proposed transmission solutions. For example, several of FTI's proposed transmission solutions are at the border of California, far from the constraints that limit import capability into the Aliso area. Proposed transmission investments should be developed in close coordination with CAISO and reduce local capacity needs to reduce dependency on gas generation in the LA Basin. This does not appear to have occurred and raises serious questions as to the validity of the transmission investments identified in the FTI study.

E. Portfolio 5: Hybrid

1. The Commission should order FTI to follow certain parameters in its hybrid Portfolio 5 to ensure that it is consistent with California climate policy.

Without explicit policy direction from the Commission, it is unclear that FTI's forthcoming Portfolio 5 will provide a useful option for replacing Aliso Canyon. Specifically, the Commission should direct FTI to consider a fifth portfolio that:

- Does not include new investments in the gas system. As discussed above, pouring new costs into the gas system will make it more difficult to equitably end reliance on fossil fuels.
- By 2027, deploy as much energy storage in the LA Basin as CAISO modeling indicates is feasible given current transmission constraints.
- If the 2035 scenario includes additional electric transmission investments, it should pair transmission upgrades that relieve the specific constraints on bringing renewable energy into the LA Basin with the siting of additional storage in the basin.
- The CEC's aggressive electrification scenario, along with clarity on where electrification can be targeted to have the greatest impact on reducing reliance on Aliso.

III. COST-BENEFIT ANALYSIS

A. The Commission and the public cannot trust FTI's analysis of the costs and benefits of the various portfolios because FTI has failed to disclose all its calculations and underlying assumptions.

It is unclear how FTI's cost-benefit analysis can support Commission decision making, when there is a lack of transparency over how FTI derived its conclusions. For example, it is unclear how FTI calculated the carbon savings from Portfolio 2 because the daily gas demand

reductions are hardcoded into the spreadsheet with FTI's cost-benefit analysis and FTI has not explained how it calculated the gas savings potential of electrification measures. As another example, it is not clear what gas price forecasts FTI used or what annual therm savings it used as an input to calculate the gas cost reductions in its cost-benefit analysis for Portfolios 3 and 4. If stakeholders knew what gas price assumptions FTI used and if they believed that those assumptions were unreasonable, it would be impossible to determine the effect of changing the gas price forecast because the gas cost reductions are hard coded into the spreadsheet FTI provided to document its cost-benefit analysis.

The Commission is well aware that a model or analysis' conclusions are only as reliable as its underlying assumptions and that meaningful stakeholder participation requires access to the models in question. That is why Commission rules require any party that submits testimony based on a computer model to provide all of their input data, identify the source of all input, a complete description of how the model operates, and other key information.[23] At the November 3 workshop, it became clear that FTI did not intend to provide this type of information to stakeholders when it refused SCE's request to access its PLEXOS runs. If the Commission intends to rely on FTI's analysis for its planning processes, the Commission should ensure that parties to I.17-02-002 have the same ability to scrutinize the assumptions and modeling that FTI has conducted that they would be afforded to vet another party's modeling in any other proceeding. Sierra Club understands that FTI is not representing a party to this proceeding, but it would be disappointing for the Commission to hold its own consultants to a lower standard for transparency than it expects from all other participants in Commission proceedings.

[23] Commission Rule of Practice and Procedure 10.3. Further, if a party's testimony relies on a computer model, that party must provide timely and reasonable access to the model to any party that requests access and explains how the request relates to its interest in the proceeding. *Id.* at 10.4.

On November 8, 2021, ALJ Zhen ordered the utilities to provide additional information to the Commission that may be useful in evaluating the costs of alternatives to Aliso Canyon. While Sierra Club appreciates the Commission's efforts to seek additional cost information, it is important to note that seeking alternative cost data from the utilities does not cure the lack of transparency over FTI's analysis. Without access to the formulae FTI used for its cost-benefit analysis, the Commission will not be able to manipulate cost inputs and fully understand how specific corrected assumptions change the ultimate conclusions.

B. FTI's assumed social cost of carbon is inconsistent with the Commission's practices for valuing carbon reductions.

FTI's cost-benefit analysis dramatically undervalues carbon reductions. According to FTI's presentation at the November 3 workshop, it assumed a social cost of carbon of $51/tonne.[24] According to the FTI Electricity Model Assumptions and Results spreadsheet that became available on the Commission's website after the workshop, FTI assumed a carbon price of $43.06/metric tonne CO2e in 2027 and $61.50 in 2035.[25] Neither of these options is appropriate.

FTI should have used the carbon reduction values that the Commission's experts at Energy and Environmental Economics, Inc. ("E3") developed for use in the Commission's avoided cost calculator ("ACC"). The carbon values in the ACC are shadow prices that "represent the cost of reducing an additional unit of GHGs in each year" of a modeled IRP scenario.[26] The ACC's carbon values increase over time, but at all times they are significantly higher than the

[24] FTC Presentation at 63, 74, 75.
[25] FTI, *PLEXOS Inputs & Results by Portfolio for 1:10 Peak Day*, at tab Carbon Price (2021) (Base and Portfolios 2-4 2027 and 2035 Electricity Model Assumptions and Results excel spreadsheet), https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/natural-gas/aliso-canyon/fti-electricity-model-assumptions-and-results.xlsx.
[26] E3, *2021 Distributed Energy Resources Avoided Cost Calculator Documentation*, at 29 (May 3, 2021) (Version 1a) ("ACC Documentation"), https://willdan.box.com/v/2021CPUCAvoidedCosts.

carbon costs FTI may have assumed in its cost-benefit analysis. For instance, the ACC carbon value is about $90 in 2027 and over $150 in 2035.[27]

Correcting this single error in FTI's cost-benefit analysis can significantly alter the conclusions about a carbon-reducing portfolio's cost effectiveness. For instance, FTI concluded that its Portfolio 3 would have greater costs than benefits in 2027, with a net cost of about $27 million.[28] However, changing the cost of carbon in the 2027 portfolio to $90/tonne indicates that this portfolio would deliver benefits that exceed its costs by more than $22 million.[29] It is important to note that even this approach undervalues reductions by assuming they all happen in 2027, rather than in later years when carbon abatement costs are even higher. Given the impact of the carbon value on the overall conclusions of the cost-benefit analysis it is crucial for the Commission to use reasonable values that are consistent with its practices in other proceedings.

The Commission should also ensure that its cost-benefit analysis accounts for reductions in methane leakage, consistent with the practices adopted in the latest ACC, whereas it is unclear if FTI's estimated carbon benefits accounted for methane leakage. E3 developed a methane leakage adder of 5.57% for upstream in-state methane leakage and a leakage adder of 3.78% for residential behind-the-meter leakage, which will be applied only to distributed energy resources that reduce behind-the-meter gas combustion by removing gas appliances.[30] The Commission

[27] *Id.* at 30, Figure 26: CO2 Cap & Trade and GHG Adder Price Series used in 2021 Avoided Cost Calculator. If anything, the Commission's current ACC undervalues carbon reductions in the electricity sector because it was based on an Integrated Resource Planning scenario with 46 MMT of carbon emissions, whereas the Commission is likely to adopt the Administrative Law Judge's recommendation in R.20-05-003 to adopt a preferred system plan with 38 MMT and *should* adopt a preferred system plan with 30 MMT to deliver climate and air quality benefits more rapidly. *See* R.20-05-003, Administrative Law Judge's Ruling Seeking Comments on Proposed Preferred System Plan, at 21 (Aug. 17, 2021).
[28] FTC Presentation at 63.
[29] *Supra* note 8 at tab Portfolio 3-Generator Adds (performing update by changing the formula for cell C17 from "=ROUND(C25*SCC,-3)" to "=ROUND(C25*90,-3)").
[30] ACC Documentation at 80–81.

should ensure that FTI clarifies its methodology so that the Commission and stakeholders can perform any corrections necessary for informed decisions.

IV. CONCLUSION

More than six years after the catastrophic failure at Aliso Canyon, the Commission has not yet deployed any of the no-regrets actions that will both facilitate the closure of Aliso by reducing gas demand in the Los Angeles area and enable California to meet its climate goals, such as launching an aggressive building electrification effort in Southern California or requiring targeted resource procurements in the LA basin. While these comments raise several major questions and concerns about FTI's methodology for assessing strategies for retiring Aliso Canyon, there is no reason for further delay in taking these no-regrets actions.

Dated: November 10, 2021.

Respectfully submitted,

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